OMB Approval Number 2700-0087

NASA RESEARCH ANNOUNCEMENT

SOFTWARE ASSURANCE RESEARCH

NASA Research Announcement Soliciting Research Proposals
Receipt Deadline June 27, 2003; 5:00 pm EDST
NRA SARP 0301

Source Evaluation Board for FY04 SARP
NASA IV&V Facility
100 University Drive
Fairmont, WV 26554

TABLE OF CONTENTS

1 Summary and Supplemental Information

Software Assurance Research NRA SARP NRA 0301.

1.1 Definition: Safety

NASA FAR Supplement Subchapter F, Part 1835.016-71, Section c, subsection 2, subsection i requires the following definition be included in NASA Research Announcements: "Safety is the freedom from those conditions that can cause death, injury, occupational illness, damage to or loss of equipment or property, or damage to the environment. NASA's safety priority is to protect: (1) the public, (2) astronauts and pilots, (3) the NASA workforce (including employees working under NASA instruments), and (4) high-value equipment and property."

1.2 Purpose

As part of the Office of Safety and Mission Assurance (OSMA) Program Operating Plan (POP) for FY 2004, this NRA solicits participation in the OSMA Software Assurance Research Program. Additionally, it describes the program's goals, objectives, and implementation strategy for FY04 – FY06.

1.3 Period for Receipt of Proposals

Proposals must be received by June 27, 2003; 5:00 pm EDST

1.4 Number of Copies Required

Proposers must submit one electronic copy of the proposal, one paper original of the proposal, and two signed originals of the transmittal letter.

1.5 Addresses for Submitting Proposals

Signed original (paper):
Source Evaluation Board for FY04 SARP
NASA IV&V Facility
100 University Drive
Fairmont, WV 26554

Electronic copy:
osmasarp@ivv.nasa.gov

1.6 Selecting Official

James D. Lloyd

Deputy Associate Administrator for the Office of Safety and Mission Assurance

NASA Headquarters

Washington, DC 20546

1.7 Names, Addresses, Telephone Numbers for Technical and Contracting Points of Contact

Technical Point of Contact
Kenneth McGill
NASA IV&V Facility
NASA Boulevard
Fairmont, WV 26554
osmasarp@ivv.nasa.gov

Contracting Point of Contact
Goddard Space Flight Center
Space Sciences Procurement Office, Code 210.M
Cathy Pierson, Contracting Officer
Greenbelt Rd.
Greenbelt, MD 20771
301-286-5257

1.8 Funds Availability

Funds are not currently available for awards under this NRA. The Government's obligation to make award(s) is contingent upon the availability of appropriated funds from which payment can be made and the receipt of proposals that NASA determines are acceptable for award under this NRA.

1.9 Resource Projections

An order of magnitude estimate of the funds to be available for awards resulting from this announcement is three-hundred fifty thousand dollars ($350,000). Two to three (2-3) awards are anticipated.

2 Technical Description

Software Assurance Research NRA SARP 0301

2.1 Program Background

Sound software engineering is critical to all NASA strategic enterprises, yet as a discipline, it is still relatively immature and, moreover, it is constantly evolving. In addition, NASA is confronted with increasing levels of system sophistication and complexity. In order to reliably control and safely operate these systems, a greater dependency is being placed on software. Software Assurance is NASA's software risk mitigation strategy. No matter what organization may perform each of the many tasks of software assurance -- safety, quality, reliability, maintainability, process analyses, product analyses, independent verification and validation, etc. – they all must be taken into account, scoped, tailored, and balanced for each project. This program was originally put in place to address NASA's continual need to be current in the assurance techniques and methodologies to best determine and provide appropriate software risk mitigation. The program is to respond to both practitioners identified needs and to look ahead to prepare for new ways to understand and prevent hazards and provide greater quality at a reasonable cost. Recent incidents have shown that software reliability and safety are as critical to mission success as hardware safety and reliability. Consistent, proven methods needed for managing, developing, testing, analyzing, and certifying software must be continually explored and developed. As the techniques and methods for developing, testing, implementing, and operating software are constantly changing, there needs to be an on going study of how best to assure the quality, safety and reliability of that software. The ever growing complexity of NASA's software, both organizationally and technically, means that software failure modes and reliability are more difficult to evaluate. NASA needs to explore the basic understanding of changing software principles and how to assure them, and then develop, test, and implement the tools, methods, and processes needed to uncover, analyze and address software defects at their root cause.

2.2 Program Goal

The goal of this research program is to provide NASA with the software assurance[1] practices, methods, and tools needed to produce safe and reliable software. This program is designed to address fundamental software assurance problems in the field of software engineering primarily as it relates to software safety, quality, independent verification

[1] Quality Assurance. (1) A planned and systematic pattern of all actions necessary to provide adequate confidence that an item of product conforms to established technical requirements. [IEEE 610.12]. (2) A set of activities designed to evaluate the process by which products are developed or manufactured. [IEEE 610.12]

and validation (IV&V)[2], testability, and reliability. It is intended to develop and transfer to NASA projects, software assurance practices, methods and tools to improve the quality of the software produced by and for NASA, and to assist NASA in becoming a leader in the development of safe and reliable, cost effective software. Thus, by addressing forward thinking research as well as addressing current needs, the OSMA SARP helps assure that sufficient and appropriate software risk mitigation is applied to the software which controls and monitors our systems.

2.3 Program Objectives

The objectives of the OSMA Software Assurance Research Program are to:

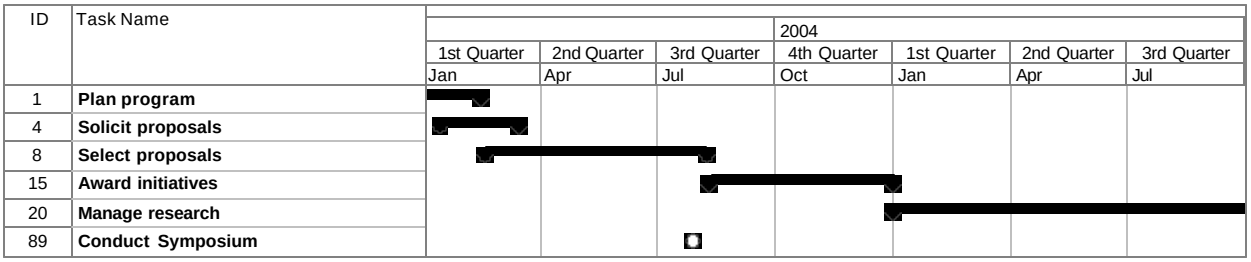
Support promising new software assurance research that facilitates NASA missions; identify, develop, adopt, and integrate software assurance "best practices" and research results into NASA programs to reduce software costs; improve delivery time; and, increase software safety and quality. Technological transfer to improve NASA programs and assist outside organizations is also a component of the SARP.

2.4 Implementation Strategy

To meet the goal and objectives, the OSMA sponsors the SARP through the NASA Independent Verification and Validation (IV&V) Facility in Fairmont WV. The IV&V Facility assists in the research selection and provides technical and management oversight of the awarded research initiatives.

2.5 Initiative Life Cycle

The OSMA SARP operates on an approximate annual cycle. Nominally, this plan is completed in January; proposals are solicited in March, received in June, selected in August, awarded in January and managed to completion. The following Gantt chart illustrates the initiative life cycle.



[2] IV&V. Verification and validation performed by an organization that is technically, managerially, and financially independent of the development organization. [IEEE 610.12]
Verification and Validation. The process of determining whether the requirements for a system or component are complete and correct, the products of each development phase fulfill the requirements of conditions imposed by the previous phase, and the final system or component complies with specified requirements. [IEEE 610.12]

2.6 Who Needs to Propose

Only proposers of new research initiatives need to submit a proposal. Program participants that have an existing OSMA SARP funded research contract or grant whose period of performance extends into FY04 or later need not submit a proposal.

Contracts or grants can be multi-year but are only funded a year at a time. Beginning in FY04, program participants that have an existing OSMA SARP funded research contract or grant whose period of performance extends into FY04 or later need not submit a proposal. Formerly, to get funding, all program participants were required to submit a proposal every year regardless of whether they had an existing contract or grant whose period of performance hadn't expired.

2.7 Proposal Format

A proposal template is included in Appendix A of this document. It can also be downloaded from http://www.ivv.nasa.gov/business/research/SARP/index.shtml

2.8 Award Types

Typically, initiatives are awarded as grants, contracts, or internal fund transfers. NASA awards grants to universities and contracts to industry through the annual NRA. A cooperative agreement or other agreement may also be used to fund an effort in response to the NRA.

2.9 Grant and Contract Period of Performance

Grants and contracts can be for single or multiple years. Typical periods of performance range from one year to three years. Multiple year contracts will have a base year with annual options.

Each year, the OSMA SARP will decide whether to continue funding multi-year grants or contracts. The decision whether to continue will be based on initiative performance including progress on deliverables and transfer of results to NASA software projects.

2.10 Funding Increments

For each grant or contract, NASA will normally process only one procurement request each year. When multi-year projects are supported, researchers should plan to carry over 15-25% of their annual funding through the first quarter of the next fiscal year so as to support work done in the October through December time frame.

Once NASA awards the research initiative grants or contracts, the OSMA SARP management will evaluate the initiative performance during the year to determine

subsequent year funding. The funding decisions will be based on initiative performance including progress on deliverables and transfer of results to NASA software projects.

2.11 Research Topics

The OSMA SARP is seeking research in selected topic areas. The topic areas can be found at the OSMA SARP web page: http://www.ivv.nasa.gov/business/research/SARP/index.shtml. Proposals outside these topic areas will also be accepted provided that the results of the proposed work will contribute to accomplishing the program goal and objectives.

2.12 Evaluation Criteria

Consistent with the above goal, objectives and strategy, research initiatives will be selected and funded based on the following criteria:

1. Relevance to software safety and mission assurance

   How significant will be the contribution of the research results to the fielding of safe and reliable software to support NASA Missions? Does it address any recognized areas of concern or need for NASA software engineering, management, safety, or assurance.

2. Clarity of objectives

   How well did the proposer define the objectives of the proposed work? How specific and measurable are the objectives? Will an observer be able to clearly determine that an objective has been satisfied?

3. Feasibility of methods and procedures

   What's the likelihood that the proposer will be able to implement the proposed research methods and procedures within resource constraints? How likely are the proposed methods and procedures to result in accomplishing the proposed objectives?

4. Potential for technology transfer to NASA software projects

   How likely are NASA software projects to use the results of the proposed research? How likely are the proposed results to be applicable to situations beyond the scope of the original research? How well does the proposed research address issues that would likely be encountered in other programs? How well does the proposer identify other NASA program(s) or strategic enterprise(s) that could apply the proposed research results? How well does the proposer show how other NASA program(s) or strategic enterprise(s) would apply the knowledge gained from the research?

5. Clarity of success criteria and progress metrics

   How well does the proposer define the conditions for success? How much interpretation will be required to know if the initiative was a success? How well does the proposer define how they will measure, track and report progress toward achieving success? Are there sufficient clear interim objectives to determine progress and the extent to which the overall objectives are being achieved?

6. Value of the proposed research for the estimated cost

   How much are the research results worth compared with the estimated cost?

7. Uniqueness of proposed research

   To what degree is the proposed research distinctive from other current and past, valid research? Do the investigator(s) demonstrate knowledge of other research relating to the proposed research? Do they clearly identify the differences between their research and similar or related research?

8. Qualifications of the research team to do the proposed research

   How qualified are the members of the proposed research team to carry out the proposed research? How relevant are their capabilities, experience, and facilities relevant to the proposed area of research? How well qualified is the Principal Investigator or team leader?

9. Past performance of the research team (where available)

   How has the research team performed on past research projects? How did their actual deliverables compare with their planned deliverables? How many periodic reviews did they plan and how many did they actually conduct?

10. Overall quality of proposed initiative

    Considering all of the above factors, how good is the proposal?

3 Instructions for Responding to this NASA Research Announcement

(a) **General**.

(1) Proposals received in response to a NASA Research Announcement (NRA) will be used only for evaluation purposes. NASA does not allow a proposal, the contents of which are not available without restriction from another source, or any unique ideas submitted in response to an NRA to be used as the basis of a solicitation or in negotiation with other organizations, nor is a pre-award synopsis published for individual proposals.

(2) A solicited proposal that results in a NASA award becomes part of the record of that transaction and may be available to the public on specific request; however, information or material that NASA and the awardee mutually agree to be of a privileged nature will be held in confidence to the extent permitted by law, including the Freedom of Information Act.

(3) NRAs contain programmatic information and certain requirements which apply only to proposals prepared in response to that particular announcement. These instructions contain the general proposal preparation information which applies to responses to all NRAs.

(4) A contract, grant, cooperative agreement, or other agreement may be used to accomplish an effort funded in response to an NRA. NASA will determine the appropriate instrument. Contracts resulting from NRAs are subject to the Federal Acquisition Regulation and the NASA FAR Supplement. Any resultant grants or cooperative agreements will be awarded and administered in accordance with the NASA Grant and Cooperative Agreement Handbook (NPG 5800.1).

(5) NASA does not have mandatory forms or formats for responses to NRAs; however, it is requested that proposals conform to the guidelines in these instructions. NASA may accept proposals without discussion; hence, proposals should initially be as complete as possible and be submitted on the proposers' most favorable terms.

(6) To be considered for award, a submission must, at a minimum, present a specific project within the areas delineated by the NRA; contain sufficient technical and cost information to permit a meaningful evaluation; be signed by an official authorized to legally bind the submitting organization; not merely offer to perform standard services or to just provide computer facilities or services; and not significantly duplicate a more specific current or pending NASA solicitation.

(b) **NRA-Specific Items.** Several proposal submission items appear in the NRA itself: the unique NRA identifier; when to submit proposals; where to send proposals; number of copies required; and sources for more information. Items included in these instructions may be supplemented by the NRA.

(c) The following information is needed to permit consideration in an objective manner. (A proposal template is provided as an appendix to this document. Only proposals submitted on the proposal template will be accepted. The template can be downloaded at http://www.ivv.nasa.gov/business/research/SARP/index.shtml) NRAs will generally specify topics for which additional information or greater detail is desirable. Each proposal copy shall contain all submitted material, including a copy of the transmittal letter if it contains substantive information.

(1) **Transmittal Letter or Prefatory Material.**

(i) The legal name and address of the organization and specific division or campus identification if part of a larger organization;

(ii) A brief, scientifically valid project title intelligible to a scientifically literate reader and suitable for use in the public press;

(iii) Type of organization: e.g., profit, nonprofit, educational, small business, minority, women-owned, etc.;

(iv) Name and telephone number of the principal investigator and business personnel who may be contacted during evaluation or negotiation;

(v) Identification of other organizations that are currently evaluating a proposal for the same efforts;

(vi) Identification of the NRA, by number and title, to which the proposal is responding;

(vii) Dollar amount requested, desired starting date, and duration of project;

(viii) Date of submission; and

(ix) Signature of a responsible official or authorized representative of the organization, or any other person authorized to legally bind the organization (unless the signature appears on the proposal itself).

(2) **Restriction on Use and Disclosure of Proposal Information.** Information contained in proposals is used for evaluation purposes only. Offerors or quoters should, in order to maximize protection of trade secrets or other information that is confidential or privileged, place the following notice on the title page of the proposal and specify the information subject to the notice by inserting an appropriate identification in the notice. In any event, information contained in proposals will be protected to the extent permitted by law, but NASA assumes no liability for use and disclosure of information not made subject to the notice.

Notice
Restriction on Use and Disclosure of Proposal Information

The information (data) contained in [insert page numbers or other identification] of this proposal constitutes a trade secret and/or information that is commercial or financial and confidential or privileged. It is furnished to the Government in confidence with the understanding that it will not, without permission of the offeror, be used or disclosed other than for evaluation purposes; provided, however, that in the event a contract (or other agreement) is awarded on the basis of this proposal the Government shall have the right to use and disclose this information (data) to the extent provided in the contract (or other agreement). This restriction does not limit the Government's right to use or disclose this information (data) if obtained from another source without restriction.

(3) **Abstract.** Include a concise (200-300 word if not otherwise specified in the NRA) abstract describing the objective and the method of approach.

(4) **Project Description.**

(i) The main body of the proposal shall be a detailed statement of the work to be undertaken and should include objectives and expected significance; relation to the present state of knowledge; and relation to previous work done on the project and to

related work in progress elsewhere. The statement should outline the plan of work, including the broad design of experiments to be undertaken and a description of experimental methods and procedures. The project description should address the evaluation factors in these instructions and any specific factors in the NRA. Any substantial collaboration with individuals not referred to in the budget or use of consultants should be described. Subcontracting significant portions of a research project is discouraged.

(ii) When it is expected that the effort will require more than one year, the proposal should cover the complete project to the extent that it can be reasonably anticipated. Principal emphasis should be on the first year of work, and the description should distinguish clearly between the first year's work and work planned for subsequent years.

(5) **Management Approach.** For large or complex efforts involving interactions among numerous individuals or other organizations, plans for distribution of responsibilities and arrangements for ensuring a coordinated effort should be described.

(6) **Personnel.** The principal investigator is responsible for supervision of the work and participates in the conduct of the research regardless of whether or not compensated under the award. A short biographical sketch of the principal investigator, a list of principal publications and any exceptional qualifications should be included. Omit social security number and other personal items which do not merit consideration in evaluation of the proposal. Give similar biographical information on other senior professional personnel who will be directly associated with the project. Give the names and titles of any other scientists and technical personnel associated substantially with the project in an advisory capacity. Universities should list the approximate number of students or other assistants, together with information as to their level of academic attainment. Any special industry-university cooperative arrangements should be described.

(7) **Facilities and Equipment.**

(i) Describe available facilities and major items of equipment especially adapted or suited to the proposed project, and any additional major equipment that will be required. Identify any Government-owned facilities, industrial plant equipment, or special toolings that are proposed for use. Include evidence of its availability and the cognizant Government points of contact.

(ii) Before requesting a major item of capital equipment, the proposer should determine if sharing or loan of equipment already within the organization is a feasible alternative. Where such arrangements cannot be made, the proposal should so state. The need for items that typically can be used for research and non-research purposes should be explained.

(8) **Proposed Costs (U.S. Proposals Only).**

(i) Proposals should contain cost and technical parts in one volume: do not use separate "confidential" salary pages. As applicable, include separate cost estimates for salaries and wages; fringe benefits; equipment; expendable materials and supplies; services; domestic and foreign travel; ADP expenses; publication or page charges; consultants; subcontracts; other miscellaneous identifiable direct costs; and indirect costs. List salaries and wages in appropriate organizational categories (e.g., principal investigator, other scientific and engineering professionals, graduate students, research

assistants, and technicians and other non-professional personnel). Estimate all staffing data in terms of staff-months or fractions of full-time.

(ii) Explanatory notes should accompany the cost proposal to provide identification and estimated cost of major capital equipment items to be acquired; purpose and estimated number and lengths of trips planned; basis for indirect cost computation (including date of most recent negotiation and cognizant agency); and clarification of other items in the cost proposal that are not self-evident. List estimated expenses as yearly requirements by major work phases.

(iii) Allowable costs are governed by FAR Part 31 and the NASA FAR Supplement Part 1831 (and OMB Circulars A-21 for educational institutions and A-122 for nonprofit organizations).

(iv) Use of NASA funds--NASA funding may not be used for foreign research efforts at any level, whether as a collaborator or a subcontract. The direct purchase of supplies and/or services, which do not constitute research, from non-U.S. sources by U.S. award recipients is permitted. Additionally, in accordance with the National Space Transportation Policy, use of a non-U.S. manufactured launch vehicle is permitted only on a no-exchange-of-funds basis.

(9) **Security.** Proposals should not contain security classified material. If the research requires access to or may generate security classified information, the submitter will be required to comply with Government security regulations.

(10) **Current Support.** For other current projects being conducted by the principal investigator, provide title of project, sponsoring agency, and ending date.

(11) **Special Matters.**

(i) Include any required statements of environmental impact of the research, human subject or animal care provisions, conflict of interest, or on such other topics as may be required by the nature of the effort and current statutes, executive orders, or other current Government-wide guidelines.

(ii) Identify and discuss risk factors and issues throughout the proposal where they are relevant, and your approach to managing these risks.

(iii) Proposers should include a brief description of the organization, its facilities, and previous work experience in the field of the proposal. Identify the cognizant Government audit agency, inspection agency, and administrative contracting officer, when applicable.

(d) **Renewal Proposals.**

(1) Renewal proposals for existing awards will be considered in the same manner as proposals for new endeavors. A renewal proposal should not repeat all of the information that was in the original proposal. The renewal proposal should refer to its predecessor, update the parts that are no longer current, and indicate what elements of the research are expected to be covered during the period for which support is desired. A description of any significant findings since the most recent progress report should be included. The renewal proposal should treat, in reasonable detail, the plans for the next period, contain a cost estimate, and otherwise adhere to these instructions.

(2) NASA may renew an effort either through amendment of an existing contract or by a new award.

(e) **Length.** Unless otherwise specified in the NRA, effort should be made to keep proposals as brief as possible, concentrating on substantive material. Few proposals need exceed 10 pages. Necessary detailed information, such as reprints, should be included as attachments. A complete set of attachments is necessary for each copy of the proposal. As proposals are not returned, avoid use of "one-of-a-kind" attachments.

(f) **Joint Proposals.**

(1) Where multiple organizations are involved, the proposal may be submitted by only one of them. It should clearly describe the role to be played by the other organizations and indicate the legal and managerial arrangements contemplated. In other instances, simultaneous submission of related proposals from each organization might be appropriate, in which case parallel awards would be made.

(2) Where a project of a cooperative nature with NASA is contemplated, describe the contributions expected from any participating NASA investigator and agency facilities or equipment which may be required. The proposal must be confined only to that which the proposing organization can commit itself. "Joint" proposals which specify the internal arrangements NASA will actually make are not acceptable as a means of establishing an agency commitment.

(g) **Late Proposals.** Proposals or proposal modifications received after the latest date specified for receipt may be considered if a significant reduction in cost to the Government is probable or if there are significant technical advantages, as compared with proposals previously received.

(h) **Withdrawal.** Proposals may be withdrawn by the proposer at any time before award. Offerors are requested to notify NASA if the proposal is funded by another organization or of other changed circumstances which dictate termination of evaluation.

(i) **Evaluation Factors.**

Evaluation factors are specified in the NRA in the section titled Evaluation Criteria.

(j) **Evaluation Techniques.** Selection decisions will be made following peer and/or scientific review of the proposals. Several evaluation techniques are regularly used within NASA. In all cases proposals are subject to scientific review by discipline specialists in the area of the proposal. Some proposals are reviewed entirely in-house, others are evaluated by a combination of in-house and selected external reviewers, while yet others are subject to the full external peer review technique (with due regard for conflict-of-interest and protection of proposal information), such as by mail or through assembled panels. The final decisions are made by a NASA Selecting Official. A proposal which is scientifically and programmatically meritorious, but not selected for award during its initial review, may be included in subsequent reviews unless the proposer requests otherwise.

(k) **Selection for Award.**

(1) When a proposal is not selected for award, the proposer will be notified. NASA will explain generally why the proposal was not selected. Proposers desiring additional information may contact the selecting official who will arrange a debriefing.

(2) When a proposal is selected for award, negotiation and award will be handled by the procurement office in the funding installation. The proposal is used as the basis for negotiation. The contracting officer may request certain business data and may forward a model award instrument and other information pertinent to negotiation.

(l) **Additional Guidelines Applicable to Foreign Proposals and Proposals Including Foreign Participation.**

(1) NASA welcomes proposals from outside the U.S. However, foreign entities are generally not eligible for funding from NASA. Therefore, unless otherwise noted in the NRA, proposals from foreign entities should not include a cost plan unless the proposal involves collaboration with a U.S. institution, in which case a cost plan for only the participation of the U.S. entity must be included. Proposals from foreign entities and proposals from U.S. entities that include foreign participation must be endorsed by the respective government agency or funding/sponsoring institution in the country from which the foreign entity is proposing. Such endorsement should indicate that the proposal merits careful consideration by NASA, and if the proposal is selected, sufficient funds will be made available to undertake the activity as proposed.

(2) All foreign proposals must be typewritten in English and comply with all other submission requirements stated in the NRA. All foreign proposals will undergo the same evaluation and selection process as those originating in the U.S. All proposals must be received before the established closing date. Those received after the closing date will be treated in accordance with paragraph (g) of this provision. Sponsoring foreign government agencies or funding institutions may, in exceptional situations, forward a proposal without endorsement if endorsement is not possible before the announced closing date. In such cases, the NASA sponsoring office should be advised when a decision on endorsement can be expected.

(3) Successful and unsuccessful foreign entities will be contacted directly by the NASA sponsoring office. Copies of these letters will be sent to the foreign sponsor. Should a foreign proposal or a U.S. proposal with foreign participation be selected, NASA's Office of External Relations will arrange with the foreign sponsor for the proposed participation on a no-exchange-of-funds basis, in which NASA and the non-U.S. sponsoring agency or funding institution will each bear the cost of discharging their respective responsibilities.

(4) Depending on the nature and extent of the proposed cooperation, these arrangements may entail:

(i) An exchange of letters between NASA and the foreign sponsor; or

(ii) A formal Agency-to-Agency Memorandum of Understanding (MOU).

(m) **Export Control Guidelines Applicable to Foreign Proposals and Proposals Including Foreign Participation.** U.S. proposals including foreign participation must include a section discussing compliance with U.S. export laws and regulations, e.g., 22 CFR Parts 120-130 and 15 CFR Parts 730-774, as applicable to the circumstances surrounding the particular foreign participation. The discussion must describe in detail the proposed foreign participation and is to include, but not limited to, whether or not the foreign participation may require the prospective proposer to obtain the prior approval of the Department of State or the Department of Commerce via a technical assistance agreement or an export license, or whether a license exemption/exception may apply. If prior approvals via licenses are necessary, discuss whether the license has been applied for or if not, the projected timing of the application and any implications for the schedule. Information regarding U.S. export regulations is available at http://www.pmdtc.org and http://www.bxa.doc.gov. Proposers are advised that under U.S. law and regulations, spacecraft and their specifically designed, modified, or configured systems, components,

and parts are generally considered "Defense Articles" on the United States Munitions List and subject to the provisions of the International Traffic in Arms Regulations (ITAR), 22 CFR Parts 120-130.

(n) **Cancellation of NRA.** NASA reserves the right to make no awards under this NRA and to cancel this NRA. NASA assumes no liability for canceling the NRA or for anyone's failure to receive actual notice of cancellation.

4 Appendix A – Proposal Template

The following template is provided for information. To complete the template, download it from http://www.ivv.nasa.gov/business/research/SARP/index.shtml

FY2004 SOFTWARE ASSURANCE RESEARCH INITIATIVE PROPOSAL
for the
NASA SOFTWARE IV&V FACILITY

Please complete this form. Limit length to 10 pages.

Submit an electronic copy to osmasarp@ivv.nasa.gov. ALSO, submit one paper copy with 2 signed transmittal letters to:

Source Evaluation Board for FY04 SARP
NASA IV&V Facility
100 University Drive
Fairmont, WV 26554

(Please do not modify the format of this document, including the headers/footers.)

Initiative Title:	
Research Topics (List those that apply):[3]	
Start Date[4]**:**	
End Date[5]**:**	
Under what contractual vehicle would your work be done? (check one and, if appropriate, complete additional annotated fields)	__ Existing grant or contract <existing grant or contract number> <existing grant or contract expiration date> __ New grant or contract __ Civil service in-house effort __ Other <describe>
NASA Point of Contact (POC)[6]**:**	
POC's NASA Center:	
POC's Phone:	
POC's Email address:	
Principal Investigator (PI):	
PI Affiliation:	
PI Phone:	
PI Email address:	

[3] List the topics that your proposed research will address. Refer to http://www.ivv.nasa.gov/business/research/SARP/index.shtml for suggested topics.
[4] Your start date is the date on which you plan to start work. Assume you will receive funds on January 2, 2004.
[5] Your end date is the date on which you plan to complete work.
[6] This is a NASA Civil Servant at the NASA Center that will directly oversee the research. If you are responding to the NRA, having a POC at the time you propose is not required.

Solicitation instrument to which you are proposing (select one):	__ OSMA SARP Level 1 Technical Program Plan __ NASA Research Announcement NRA SARP 0301
Your organization type (check those that apply):	__ Government Agency __ For Profit __ Non-profit __ Educational __ Small business __ Woman-owned __ Minority-owned __ Other (Please describe:)
Your organization's Authorizing Official's name[7]:	
Authorizing Official's Phone:	
Authorizing Official's Email address:	
Authorizing Official's surface mail address:	
Initiative ID:	*NASA IV&V USE ONLY*

Abstract:

<Describe the problem or challenge to be addressed and what you plan to prove or achieve. [No more than eight lines.]>

Definition of Terms:

<Define unique terms used in this document.>

Key Words:

<List key words for your planned research so that NASA can index your results for publication.>

[7] If your organization is a commercial entity, your authorizing official would be your contracting officer. If your organization is a university, your authorizing official would be your sponsored research officer or equivalent. If your organization is a NASA Center, your authorizing official would be your Center's Safety and Mission Assurance Director.

Abbreviations:

Objectives:

<What do you need to accomplish, and by when, for your research to succeed? For example: By June 2004, establish code inspection technique as standard operating procedure in development project XYZ. [No more than eight lines.]>

Relevance to Software Safety and Mission Assurance:

<Explain the need for the research. Provide a detailed description of the problem or challenge. Describe the conditions under which the problem manifests itself. Describe the potential contribution which the proposed effort is expected to make to achieve the OSMA goal and objectives.>

Methods and Procedures:

<Describe the approach to conducting the research. List and describe the activities that you will perform to accomplish your objectives. Describe the level of control and rigor to be applied.>

Potential for Technology Transfer to NASA Software Projects:

<What NASA projects would use your results? How would they use your results? What endorsements have you received from NASA projects?>

Success Criteria and Progress Metrics:

<How will you know when you have succeeded? What indicators and measures will you use to substantiate that you are making progress and that you have succeeded? For example, percentage of modules complete could be a progress metric. Completing 100% of planned modules could be a success criterion.>

Uniqueness of the Research:

<Define the state of the art in this area. What similar research has been done? How does your research differ? What steps have you taken to ensure that your research is unique?>

Qualifications of the Research Team:

<Delineate education and experience relevant to the proposed area of research. Describe the unique capabilities, experience, people or techniques offered in this proposal. Specifically describe the qualifications of the Principal Investigator or team leader>

Facilities and Equipment:

<List the facilities and equipment required to do the proposed work. Separate into what you have and what you need.>

NASA Software Project Data Requirements:

<List those data that you would like to request from NASA software projects. Distinguish those which are absolutely necessary to successfully perform your research. Include format, type, volume and date required.>

Data that You will Provide

<List those data that you have available that will support your research.>

Organizational Center Initiative History:

<For previous NASA Center Initiatives within the last 2 years, list title, number of deliverables planned, number of deliverables delivered, number of quarterly status reports submitted to the IV&V Facility, number of scheduled quarterly reviews held.>

Deliverables/Schedule:

(Include all program years.)

Task	Deliverable	Due Date (FY)	Quarter	For publication? (Y, N)

Notes:
Due dates will be interpreted as the last date of the Quarter for the Fiscal Year (e.g., a deliverable due FY04 Q2 will be due Mar. 31, 2004, the end of the first quarter of the Fiscal Year).
All deliverables for publication must be cleared for public release according to NASA Program Directive 2200 so they can be posted on the SARP Results Web Site.
Any deliverable listed here will be tracked on the Center Initiative Management Tool web site and should be more than only a milestone (i.e., a delivery of something tangible should be represented).
Deliverables should include an end-of-year briefing summarizing the year's accomplishment.

Milestones/Schedule:

(Include all program years.)

Milestone	Planned Date (FY)	Quarter

Milestone	Planned Date (FY)	Quarter

Notes:
Milestones are significant events in the progress of your work. For example, a milestone could be decision to proceed to a subsequent major phase of the work.
Consider defining at least one milestone for each quarter.

PROPOSED COSTS (MUST INCLUDE ALL PROJECTED OUT-YEAR FUNDING)

Yearly:

		FTEs	
FY	**Cost (K$)**	**Civil Servant**	**Contractor**
04			
05			
06			
Total			

Note: Previously funded initiatives may have different actual FY dates.
Costing should include a trip to the IV&V Facility or other continental US location to present the end-of-year briefing in a symposium setting.

FY04 Breakout:

FY/Qtr	Cost (K$)	Comments
04/1		
04/2		
04/3		
04/4		
05/1		(Carry over no more than 25% of FY04 funding to mitigate 1st quarter funding delays in FY05.)
03 C/O		(Subtract any funds carried over from FY03.)
Total		(Should match the FY04 entry in the table above.)

Other Funding Sources:

<Are any other organizations contributing funds to this effort?)

5 Appendix B - Certifications

Certification Regarding Debarment, Suspension, and Other Responsibility Matters Primary Covered Transactions

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 34 CFR Part 85, Section 85.510, Participant's responsibilities. The regulations were published as Part VII of the May 26, 1988 Federal Register (pages 19160-19211).

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
   (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
   (b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statues or commission of embezzlement theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
   (c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
   (d) Have not within three-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.
2. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Dated: _____ Applicant: _____

Mailing Address:

_____

_____

Certification Regarding Lobbying

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000, and not more than $100,000 for each such failure.

Dated: _____ Applicant: _____

Mailing Address:

_____

_____

Certification of Compliance with the NASA Regulations Pursuant to Nondiscrimination in Federally Assisted Programs

The ***(Institution, corporation, firm, or other organization on whose behalf this assurance is signed, hereinafter called "Applicant ")*** hereby agrees that it will comply with Title VI of the Civil Rights Act of 1964 (P.L. 88-352), Title IX of the Education Amendments of 1962 (20 U.S. 1680 et seq.), Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S. 794), and the Age Discrimination Act of 1975 (42 U.S. 16101 et seq.), and all requirements imposed by or pursuant to the Regulation of the National Aeronautics and Space Administration (14 CFR Part 1250) (hereinafter called "NASA") issued pursuant to these laws, to the end that in accordance with these laws and regulations, no person in the United States shall, on the basis of race, color, national origin, sex, handicapped condition, or age be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the Applicant receives federal financial assistance from NASA; and hereby give assurance that it will immediately take any measure necessary to effectuate this agreement.

If any real property or structure thereon is provided or improved with the aid of federal financial assistance extended to the Applicant by NASA, this assurance shall obligate the Applicant, or in the case of any transfer of such property, any transferee, for the period during which the real property or structure is used for a purpose for which the federal financial assistance is extended or for another purpose involving the provision of similar services or benefits. If any personal property is so provided, this assurance shall obligate the Applicant for the period during which the federal financial assistance is extended to it by NASA.

This assurance is given in consideration of and for the purpose of obtaining any and all federal grants, loans, contracts, property, discounts, or other federal financial assistance extended after the date hereof to the Applicant by NASA, including installment payments after such date on account of applications for federal financial assistance which were approved before such date. The Applicant recognized and agrees that such federal financial assistance will be extended in reliance on the representations and agreements made in this assurance, and that the United States shall have the right to seek judicial enforcement of this assurance. This assurance is binding on the Applicant, its successors, transferees, and assignees, and the person or persons whose signatures appear below are authorized to sign on behalf of the Applicant.

Dated: _____ Applicant: _____

Mailing Address:

_____